

REMARKS

Responsive to the outstanding Office Action, applicant has carefully studied the Examiner's rejections. Claims 7-11 have been amended herein. It is respectfully submitted that no new matter has been entered in these amendments. Favorable reconsideration of the application in light of the following detailed arguments and amendments is respectfully requested.

REJECTION OF CLAIMS UNDER 35 USC §112

Claims 7-11 were rejected under 35 USC 112 as being indefinite.

Specifically, the Examiner rejected the use of the terms "ideally" and "essentially" as used in the claims. In response thereto, these terms have been removed from the claims.

The Examiner noted that claim 7 included the term "unit" and indicated that it was indefinite to what this term referred. While applicant believes the antecedent for this term is clear from the language of the claim, it has been amended herein to clearly indicate that the synthesis unit is referenced by this term.

The Examiner also rejected claim 7 under 35 USC 112 as lacking any positive steps toward the production of nitrogen fertilizer. Applicant respectfully traverses this rejection on the grounds that the invention is designed around the new and Inventive application and integration of a self-regulating centrifugal pump in the process of the production on nitrogen fertilizer. The basic process steps for the production on nitrogen fertilizer itself belongs to the state of the art (see [0002] of the specification) and therefore it is believed that such language is not necessary in claim 7, as it does not directly address the present invention.

In view of the above, reconsideration and withdrawal of the rejections under 35 USC 112, second paragraph are respectfully requested.

REJECTION OF CLAIMS UNDER 35 USC §103

In the outstanding Office Action, the Examiner rejected claims 7-11 under 35 USC §103 as being unpatentable over Vanmarcke et al in view of Perry's Chemical Engineering Handbook.

Applicant agrees with the Examiner's assertion that Vanmarcke et al (US 4943308) disclose a process for producing a urea fertilizer wherein the apparatus includes a synthesis unit, an evaporation unit and a granulation unit. Perry et al teaches the use of centrifugal pumps for transferring liquids of all types. However, it is respectfully submitted that the use of a self-regulating centrifugal pump is not included in either of these references.

The difference of self-regulating pumps from pumps as state of the art ("Kreiselpumpen" or centrifugal pumps) has been described in the references (AT281609 and AT291 003). Normal pumps ("Krfilispumpen", centrifugal pumps) can be found throughout technical literature in the field.

There is a significant distinction between "self-regulating" and "automated". Typical known systems found in the art are "automated". During automation it is generally required that a reference value for the respective parameter needs to be given. This reference value can e.g. be the delivery of a centrifugal pump. The reference value must be compared with an actual value. Therefore a control system needs to influence an actuating variable. This procedure must be accomplished until actual value and reference value are concordant with each other or lie apart only by a tolerable difference. Therefore appropriate equipment is necessary to carry out these functions.

Any centrifugal pump, except those of the self regulating pump, requires continuous supply of the pumped solution with enough pressure to avoid cavitation (enough NPSH value (Net Positive Suction Head)). This is usually accomplished by providing suction vessels where the liquid has to remain above prescribed minimum level to fulfill the NPSH requirements of the pump or by ensuring enough pressure of the liquid.

In a process for urea evaporation, because the retention time (suction volume) at high temperature needs to be minimized in order to reduce the formation of biuret, the

level is controlled not in a suction vessel but in a long vertical suction pipe (above 10 m). This is a known state of the art solution used in the industry and accepted by those skilled in the art.

Self regulating pump do not have NPSH requirements as known centrifugal pumps do. Self regulating pumps can be operated with interrupted inlet flow ("dry" operation) without consequences. The maintaining of the level in the suction line is not required. These unique properties are utilized in the invention to achieve the biuret reduction.

The present invention, as claimed in independent claim 7, eliminates the need of the long suction line as well as the need of controlling of the suction height. This therefore reduces the retention time and unwanted biuret formation as well as the number of required control loops.

Neither Perry et al. nor Vanmarcke et al includes a self-regulating centrifugal pump. A person skilled in the art would use a pumping technology as described in Perry et al. Therefore the advantages of the current invention relating to the height reduction as well as to the reduced biuret formation would not be attained. All plants constructed and in operation till now utilize the centrifugal pumping technology as described by Perry at al., though the principle of biuret formation are known to the person skilled in the art. It is therefore submitted that it would not be obvious, in view of the provided references, to use a self-regulating pump as claimed.

Applicant further disagrees with the Examiner's opinion that there is no evidence on record of unexpected results which would emanate from the use of a self-regulating centrifugal pump, versus other types of pumps. In the specification of the present application, the positive effects of the use of a self-regulating centrifugal pump in comparison to the use of a centrifugal pump state of the art related to the biuret and ammonia formation between evaporator and granulator are clearly pointed out (see page 2, table). These effects were not predictable for a person skilled in the art. It is therefore submitted that the present invention, as claimed in claim 7, is patentable.

As claims 8-11 depend from an allowable claim 7, it is submitted that these claims are allowable based, at least, upon this dependence from an allowable base claim.

SUMMARY

It is believe that the above amendments place the application in condition for allowance. Should the Examiner wish to modify the application in any way, applicant's attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,

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